

### Amendments to the Specification:

Please replace the paragraph beginning on page 12, line 7 with the following amended paragraph:

Referring to FIGS. 1 and 11, the pump 10 of the present invention provides a mechanism for controlling or adjusting an actual delivery of fluid based on variations from nominal data used to estimate pump performance. The processing unit 30 retrieves the operating condition programming code 36 from memory 34 and applies it to the pressure and position data received during this pump cycle. The pump pressure data and pump position data are processed by the processing unit 30. Sensing the force that the resilient diaphragm 23 of the pumping chamber 24 exerts against the pumping element 44 and analyzing that force can determine an estimated volume of fluid flow per stroke (calculated stroke volume). The processing unit 30 utilizes the calculated stroke volume in a closed loop stroke feedback system to modify the stroke frequency to compensate for variation in the stroke volume. In the closed loop stroke feedback system, the processing unit 30 adjusts an actual delivery of fluid based on variation between the calculated stroke volume and nominal data used to estimate pump performance.

Please replace the paragraph beginning on page 19, line 5 with the following amended paragraph:

In operation, the above closed loop stroke feedback system embodiments provide several advantages. The first advantage is that the actual volume delivered per stroke can be used by the processing unit 30 to continuously adjust the stroke rate. The second advantage is that the detection of

the pressure data profile and the determination of the opening of outlet valve 28 permits the processing unit 30 to determine lost stroke volume (i.e. calculated stroke volume as compared with the nominal stroke volume) and to use this as an indicator of presence of air in the pumping chamber 24, as well as determining the size of air bubbles in the set. These advantages of the present invention limit the effects of all causes of delivery error, including: compliance of physical components, air in the delivery fluid, variations in line pressure, and manufacturing variability of physical components (for example, in valve opening pressures).

**Amendments to the Drawings:**

The enclosed sheet(s) of drawings include changes to Fig. 10 to conform it to the written description on page 14, line 23 through page 15, line 6 of the specification. A complete set of formal drawings are submitted herewith (including the corrected/replacement sheet 7/10 for FIG. 10) to replace the informal drawings originally submitted with the application.

Encl.:       Annotated Sheet Showing Changes  
              Formal Drawings (Including Corrected/Replacement  
              Sheet 7/10 for FIG. 10)